

Message

From: Jeff King [jking@king-macgregor.com]
Sent: 4/6/2018 8:18:32 PM
To: 'Pennington, Michael (DEQ)' [PENNINGTONM@michigan.gov]
CC: 'Donald Tilton' [dtilton48@sbcglobal.net]; 'Nimmer, Mike' [Mike.Nimmer@Foth.com]; 'Fish, Kim (DEQ)' [FISHK@michigan.gov]; Teresa Seidel [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=userffbc69ab]; 'Wilson, Kristina (DEQ)' [WilsonK17@michigan.gov]; 'dennis donohue' [ddonohue@wnj.com]; 'Donohue, Steve' [Steve.Donohue@Foth.com]; 'David Anderson' [danderson@aquilaresources.com]; Burdick, Melanie [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=bc0fae2c6b7a43ec8b577d3689229aea-MHaveman]
Subject: Back Forty Working Wetland Water Budget Model Documents
Attachments: Spicer Water Budget Model_WL-40-41 property_existing.xlsm; Spicer Water Budget Model_WL-40-41 property_operating.xlsm

Hi Mike –

Please see below and attached wetland water balance information with respect to the proposed Back Forty project. We are providing you with a modified version of the wetland water budget model that you provided to us last week, so that we might discuss the attached results with you at your earliest convenience. For right now, we are sending in this email, and one to follow, those water balance spreadsheets for Wetland 40/41 and what we are calling the “Wetland C1 Lobe”. There are more spreadsheets in the works to address the remaining wetlands, but for now we thought it best to start with these two drafts, and in so doing, consider them as examples that we could use to evaluate the remaining wetlands associated with this proposed project. In addition, we are including Mike Nimmer’s email below, so that hopefully it also might assist you in your review, as you will read some of the logic that he and Don Tilton put into the development of these materials over the past week or so.

I will be attempting to contact you Monday morning (April 9) in an effort to schedule a time when we could meet or have a conference call early in the week to go over our work on this matter since we last spoke, and then move forward with the additional necessary assessments for each wetland. Thank you for your attention to this matter.

Jeff

From: Nimmer, Mike
Sent: Tuesday, April 03, 2018 4:48 PM
To: 'Donald Tilton' <dtilton48@sbcglobal.net>
Cc: Jeff King <jking@king-macgregor.com>;
Subject: RE: Status

Don,

Attached is a revised MDEQ water balance model for WL-A1/A3 Property (for existing conditions). I’ve been using this wetland scenario to make the revisions we discussed with Mike Pennington; once we all agree to the revisions, we’ll apply this model to the other wetlands (for existing and operating conditions). Note that I was careful not to add/subtract rows/columns, so that we could easily compare it with the original model, and to facilitate cut/paste functions should we chose to re-insert logic from the original worksheet. Below is a summary of the revisions, organized by tab:

- Site Information
 - I updated the drainage area calculation to subtract the wetland area. After further review of the way their calculations are set up, the precipitation on the wetland would have been double-counted without this change.
- Climate Log

- I added the winter correction that we discussed. As a refresher, we discussed summing Dec-Mar precipitation, and adding it evenly in the month of April (like we did in the Foth model). As I recall, Mike P was okay with that revision, per our discussion last week. Note that I added the revisions in multiple, hopefully transparent, steps in columns J – T, which should facilitate a relatively easy change should we choose to.
- Infiltration
 - I didn't change anything yet regarding these calculations. However, you'll see that I added some other (and in my mind, more credible) infiltration rate options in column L. You'll notice that while the other rates are quite a bit lower than the one Mike P provided, we can easily insert these (or others) into cell D15 as a sensitivity analysis (the model is definitely sensitive to this parameter).
- Groundwater
 - I didn't change anything yet regarding these calculations. Per our discussion, we were going to keep this blank for now to see what our water balance looks like without the groundwater contribution (Mike P also agreed with that approach as a first cut). Note that I did add the logic to quickly insert groundwater flux values should we want to (into cells E15, F15, & G15).
- Surface Runoff
 - I changed the logic in columns D, I, and N to not use the TR-55 curve number calculation. Per our discussion the other day, I instead scaled the daily runoff precipitation by the total annual runoff value in the USGS Oakes & Hamilton reference for the Menominee River watershed. That reference contained an overland flow value for average conditions (which along with recharge equaled stream flow in their water balance). For wet and dry conditions, overland flow values were not explicitly provided in Oakes & Hamilton; however, the values were parsed out of the streamflow values, which were provided. Note that while Mike P agreed that the model needed revising with regard to the TR-55 calculation and that it was likely under-predicting runoff, we did not discuss the specifics of how we would make the changes (he gave us the green light to give a shot at another approach, should we choose to do so). I think we have a good case with the approach we took, but it will need to be discussed with him.
- Hydrograph
 - I changed the logic in column R so that the water level was not zeroed out at the ground surface. This was a short-coming that you and I identified in the model, and Mike P also recommended that we make this change. Note that I also added a calculation in column S to account for the porosity when the water level drops below ground. The 'wetland water depth' line that you see on the graph now pulls from column S.
 - Note that I also added a check of runoff depth in column B. This calculation in column B is the runoff depth from the watershed on a unit basis (i.e. depth across the watershed); the runoff calculation that they have in column F is (runoff depth*watershed area)/wetland area. I thought it would be good to add column B to distinguish between the two runoff values on this summary page.
- Water Balance Calculator
 - No changes made.
- Appendix
 - No changes made.

Thanks!

Mike

*Mike Nimmer, P.E.**

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